[Federal Register: September 15, 2008 (Volume 73, Number 179)]
[Rules and Regulations]
[Page 53105-53113]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr15se08-1]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2008-0052; Directorate Identifier 2008-NE-01-AD; Amendment 39-15672; AD 2008-19-05]

RIN 2120-AA64

Airworthiness Directives; Engine Components, Inc. (ECi) Reciprocating Engine Cylinder Assemblies

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for Lycoming Engines (formerly Textron Lycoming) models 320, 360, and 540 series, "Parallel Valve" reciprocating engines, with certain Engine Components, Inc. (ECi) cylinder assemblies, part number (P/N) AEL65102 series "Titan", installed. This AD requires initial and repetitive visual inspections and compression tests to detect cracks at the head-to-barrel interface, replacement of cylinder assemblies found cracked, and replacement of certain cylinder assemblies, at new reduced times-in-service. This AD results from reports of 45 failures with head separations of ECi cylinder assemblies. We are issuing this AD to prevent loss of engine power due to cracks at the head-to-barrel interface in the cylinder assemblies and possible engine failure caused by separation of a cylinder head, which could result in loss of control of the aircraft.

DATES: This AD becomes effective October 20, 2008.

ADDRESSES: You can get the service information identified in this AD from Engine Components, Inc., 9503 Middlex, San Antonio, TX 78217; Phone (800) 324-2359; fax (210) 820-8102; http://www.eci2fly.com.

The Docket Operations office is located at Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.

FOR FURTHER INFORMATION CONTACT: Peter W. Hakala, Aerospace Engineer, Special Certification Office, FAA, Rotorcraft Directorate, 2601 Meacham Blvd., Fort Worth, TX 76193; e-mail: peter.w.hakala@faa.gov; telephone (817) 222-5145; fax (817) 222-5785.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed AD. The proposed AD applies to Lycoming Engines (formerly Textron Lycoming) models 320, 360, and 540 series, "Parallel Valve" reciprocating engines, with certain Engine Components Inc. (ECi) cylinder assemblies, part number (P/N) AEL65102 series "Titan", installed. We published the proposed AD in the Federal Register on May 19, 2008 (73 FR 28756). That action proposed to require initial and repetitive visual inspections and compression tests to detect cracks at the head-to-barrel interface, replacement of cylinder assemblies found cracked, and replacement of certain cylinder assemblies, at new reduced times-in-service.

Examining the AD Docket

You may examine the AD docket on the Internet at http://www.regulations.gov; or in person at the Docket Operations office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Operations office (telephone (800) 647-5527) is provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Request To Reduce the Economic Impact

One commenter, the Aircraft Owners and Pilots Association, states that the 50-hour inspection interval should be increased to 100 hours, to reduce the economic impact of the cylinder assembly inspections. Another commenter, a private citizen, states that the cost of the 50-hour inspections was not considered in the NPRM economic estimate.

We do not agree. We selected the 50-hour inspection interval so that aluminum cylinder cracks could be detected before a head separation occurred. By removing leaking cylinder heads discovered during the periodic 50-hour inspections, the probability of having an in flight head separation is greatly reduced. Also, the 50-hour inspection interval coincides with the scheduled maintenance for normal engine oil and filter changes. Also, the costs of compliance in the NPRM did include costs for the additional cylinder assembly inspections. We did not change the AD.

Retiring Cylinder Assemblies at Time-Between-Overhaul Is Too Expensive

One commenter, a private citizen, states that it is too expensive to retire all the subject cylinder assemblies at the normal overhaul time. Another commenter, a private citizen, states that it is unreasonable for general aviation airplane owners, in Part 91 use, to be required to retire cylinder assemblies at the time-between-overhaul or at normal engine overhaul time.

We do not agree. The subject cylinder assemblies can be safely run to the normal TBO with the required 50-hour inspections, with compression tests. Because of metallurgical analysis results of the fatigue cracks in the aluminum alloy cylinder heads, and also the history of the head separation hours-in-service, the probability of a head separation is greater with the subject cylinder assemblies running past the time-between-overhaul time. Therefore, we do not consider the cylinder assemblies to be airworthy past the normal engine overhaul time. We did not change the AD.

Cylinder Assembly Serial Number Range Is Different in the ECi Mandatory Service Bulletin

One commenter, ECi., states that the cylinder assembly serial number range in the proposed AD for the Group "B" cylinders is slightly different from the serial numbers listed in the ECi Mandatory service Bulletin No. 08-1. The commenter states that several additional cylinder serial numbers should be included in Group "B".

We do not agree. We researched the cylinder assembly serial numbers in the proposed AD and they are correct. The Group "A" cylinder assemblies go up to serial number 35171-22. The Group "B" cylinder assemblies start at serial number 35239-01. We discussed the serial number comment with ECi. They agree that the serial number range in the proposed AD is correct. ECi states that they have revised the serial numbers in ECi. Mandatory Service Bulletin (MSB) No. 08-1 to match the serial numbers in the AD, and issued MSB No. 08-1, Revision 3, dated August 19, 2008. We now reference this MSB Revision 3 in the AD.

Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD as proposed. We have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

We estimate that this AD will affect 13,000 ECi cylinder assemblies installed in aircraft of U.S. registry. The visual inspection and compression tests will take about 4 work-hours for each engine. An individual cylinder replacement will require $1,100 for parts and 6 work-hours. Lycoming engines with a set of 4 ECi cylinders will require 12 work-hours for the cylinder replacement. Lycoming engines with a set of 6 ECi cylinders will require 16 work-hours for the cylinder replacement. We estimate 18 percent of the affected population of cylinders will be replaced. We estimate the total cost of the AD to U.S. operators to be $7,952,000. Our estimate is exclusive of any possible warranty coverage.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in subtitle VII, part A, subpart III, section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866;

(2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends 14 CFR part 39 as follows:

PART 39–AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

2008-19-05 Engine Components, Inc. (ECi): Amendment 39-15672. Docket No. FAA-2008-0052; Directorate Identifier 2008-NE-01-AD.

Effective Date

(a) This airworthiness directive (AD) becomes effective October 20, 2008.

Affected ADs

(b) None.

Applicability

(c) This AD applies to the Lycoming Engines (formerly Textron Lycoming) models 320, 360, and 540 series, "Parallel Valve", reciprocating engines listed in Table 1 of this AD, with ECi cylinder assembly, part number (P/N) AEL65102 series "Titan", and with cylinder head, P/N AEL85099, installed.

(1) The applicable cylinder assembly serial numbers (SNs) are SN 1138-02 through SN 35171-22, (referred to in this AD as Group "A" cylinder assemblies); and

(2) SN 35239-01 through SN 37016-28 (referred to in this AD as Group "B" cylinder assemblies).

(3) Note that the cylinder assembly P/N is at the crankcase end of the cylinder assembly, and might be difficult to see. As a guide in determining if your cylinder assemblies are affected, all affected cylinder assemblies have cylinder head P/N AEL85099. The cylinder head P/N is at the top of the cylinder head, near the intake and exhaust valve springs, and is easier to locate than the cylinder assembly P/N.

(4) Note that the set of numbers appearing on the cylinder, above and to the left of the SN, in the form of "123456" is not used for determining applicability.

Table 1–Engine Models

Cylinder Assembly Part Number:	Installed on Engine Models:
AEL65102-NST04	**O-320**-A1B, A2B, A2C, A2D, A3A, A3B, B2B, B2C, B2D, B2E, B3B, B3C, C2B, C2C, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H **IO-320**-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B **AEIO-320**-D1B, D2B, E1A, E1B, E2A, E2B **AIO-320**-A1A, A1B, A2A, A2B, B1B, C1B **LIO-320**-B1A

AEL65102-NST05	**IO-320**-C1A, C1B, C1F, F1A **LIO-320**-C1A
AEL65102-NST06	**O-320**-A1A, A2A, A2B, A2C, A3A, A3B, A3C, E1A, E1B, E2A, E2C, (also, an O-320 model with no suffix) **IO-320**-A1A, A2A
AEL65102-NST07	**IO-320**- B1A, B1B **LIO-320**- B1A
AEL65102-NST08	**O-320**-B1A, B1B, B2A, B2B, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C3A, C3B, C3C, D1A, D1B, D2A, D2B, D2C
AEL65102-NST10	**O-360**-A1A, A1C, A1D, A2A, A2E, A3A, A3D, A4A, B1A, B1B, B2A, B2B, C1A, C1C, C1G, C2A, C2B, C2C, C2D, D1A, D2A, D2B **IO-360**-B1A, B1B, B1C **HO-360**-A1A, B1A, B1B **HIO-360**-B1A, B1B **AEIO-360**-B1B **O-540**-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, B1A5, B1B5, B1D5, B2A5, B2B5, B2C5, B2C5D, B4A5, B4B5, B4B5D, D1A5, E1A, E4A5, E4B5, E4C5, F1A5, F1B5, G1A5, G2A5 **IO-540**-C1B5, C1C5, C2C, C4B5, C4B5D, C4C5, D4A5, D4B5, N1A5, N1A5D
AEL65102-NST12	**O-360**- A1A, A1AD, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A1P, A2A, A2D, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A4P, A5AD, B1A, B2C, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, C4F, C4P, D2A, F1A6, G1A6 **HO-360** –C1A **LO-360**-A1G6D, A1H6 **HIO-360**-B1A, B1B, G1A **LTO-360**-A1A6D **TO-360**-A1A6D **IO-360**-B1B, B1BD, B1D, B1E, B1F, B1F6, B1G6, B2E, B2F, B2F6, B4A, E1A, L2A, M1A, M1B **AEIO-360**-B1B, B1D, B1E, B1F, B1F6, B1G6, B1H, B2F, B2F6, B4A, H1A, H1B **O-540**-A4D5, B2B5, B2C5, B2C5D, B4B5, B4B5D, E4A5, E4B5, E4B5D, E4C5, G1A5, G1A5D, G2A5, H1A5, H1A5D, H1B5, H1B5D, H2A5, H2A5D, H2B5D **IO-540**-C4B5, C4B5D, C4D5, C4D5D, D4A5, D4B5, D4C5, N1A5, N1A5D, T4A5D, T4B5, T4B5D, T4C5D, V4A5, V4A5D **AEIO-540**-D4A5, D4B5, D4C5, D4D5

AEL65102-NST26	**IO-540**-J4A5, R1A5 **TIO-540**-C1A, E1A, G1A, H1A
AEL65102-NST38	**IO-360**-F1A **TIO-540**-AA1AD, AB1AD, AB1BD, AF1A, AG1A, AK1A, C1A, C1AD, K1AD **LTIO-540**-K1AD
AEL65102-NST43	**O-360**-J2A **O-540**-F1B5, J1A5D, J1B5D, J1C5D, J1D5D, J2A5D, J2B5D, J2C5D, J2D5D, J3A5, J3A5D, J3C5D **IO-540**-AB1A5, W1A5, W1A5D, W3A5D
AEL65102-NST44	**O-540**-L3C5D

For information, the Lycoming Engines (formerly Textron Lycoming) models 320, 360, and 540 series, "Parallel Valve", reciprocating engines are installed on, but not limited to, the aircraft listed in the following Table 2:

Table 2–Engines Installed On, But Not Limited To

Engine Models:	**Installed on , But Not Limited To:**
O-320-A1A	Piper Aircraft: Tri-Pacer (PA-22 “150”, PA-22S “150”), Apache (PA-23), Pawnee (PA-25) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B) Mooney Aircraft: Mark (20A) Dinfia: Ranquel (1A-46) Simmering-Graz Pauker: Flamingo (SGP-M-222) Aviamilano: Scricciolo (P-19) Vos Helicopter Co.: Spring Bok
O-320-A1B	Piper Aircraft: Tri-Pacer (PA-22 “150”, PA-22S “150”), Apache (PA-23) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B) S.O.C.A.T.A.: Horizon (Gardan)
O-320-A2A	Piper Aircraft: Tri-Pacer (PA-22 “150”, PA-22S “150”), Agriculture (PA-18A “150”) Super Cub (PA -18 “150”), Caribbean (PA-22 “150”), Pawnee (PA-25) Intermountain Mfg. Co.: Call Air Texas (A-5, A-5T) Lake Aircraft: Colonial (C-1) Rawdon Bros.: Rawdon (T-1, T-15, T-15D) Shinn Engineering: Shinn (2150-A) Dinfia: Ranquel (1A)46) Neiva: (1PD-5802) Sud: Gardan-Horizon (GY-80)

	LaVerda: Falco (F8L Series II, America)
	Malmo: Vipan (MF1-10)
	Kingsford Smith: Autocrat (SCRM-153)
	Aero Commander: 100
O-320-A2B	Piper Aircraft: Tri-Pacer (PA-22 “150”, PA-22S “150”), Cherokee (PA-28 “150”), Super Cub (PA -18 “150”)
	Champion Aircraft: Challenger (7GCA, 7GCB, 7KC), Citabria (7GCAA, 7GCRC), Agriculture (7GCBA)
	Beagle: Pup (150)
	Artic: Interstate S1B2
	Robinson: R-22
	Varga: Kachina 2150A
O-320-A2C	Robinson: R-22
	Cicare: Cicare AG
	Bellanca Aircraft: Citabria 150 (7GCAA), Citabria 150S (7GCBC)
O-320-A2D	Piper Aircraft: Apache (PA-23)
O-320-A3A	Doyn Aircraft: Doyn-Cessna (170, 170A, 170B)
	Corben-Fettes: Globe Special (Globe GC-1B)
O-320-A3B	Piper Aircraft: Apache (PA-23)
	Doyn Aircraft: Doyn-Cessna (170, 170A, 170B)
	Teal II: TSC (1A2)
O-320-B1A	Piper Aircraft: Apache (PA-23 “160”)
	Doyn Aircraft: Doyn-Cessna (170, 170A, 170B)
	Malmo: Vipan (MF1-10)
O-320-B1B	Piper Aircraft: Apache (PA-23 “160”)
	Doyn Aircraft: Doyn-Cessna (170, 170A, 170B)
O-320-B2A	Piper Aircraft: Tri-Pacer (PA-22 “160”, PA-22S “160”)
O-320-B2B	Piper Aircraft: Tri-Pacer (PA-22 “160”, PA-22S “160”)
	Beagle: Airedale (D5-160)
	Fuji-Heavy Industries: Fuji (F-200)
	Uirapuru: Aerotec 122
O-320-B2C	Robinson: R-22
O-320-B2D	Maule: MX-7-160
O-320-B2E	Lycon
O-320-B3A	Piper Aircraft: Apache (PA-23 “160”)
	Doyn Aircraft: Doyn-Cessna (170, 170A, 170B)

O-320-B3B	Piper Aircraft: Apache (PA-23 “160”)
	Doyn Aircraft: Doyn-Cessna (170, 170A, 170B)
	Sud: Gardan (GY80-160)
O-320-C1A	Piper Aircraft: Apache (PA-23 “160”)
	Riley Aircraft: Rayjay (Apache)
O-320-C1B	Piper Aircraft: Apache (PA-23 “160”)
O-320-C3A	Piper Aircraft: Apache (PA-23 “160”)
O-320-C3B	Piper Aircraft: Apache (PA-23 “160”)
O-320-D1A	Sud: Gardan (GY-80)
	Gyroflug: Speed Cancard
	Grob: G115
O-320-D1F	Slingsby: T67 Firefly
O-320-D2A	Piper Aircraft: Cherokee (PA-28S “160”)
	Robin: Major (DR400-140B), Chevalier (DR-360), (R-3140)
	S.O.C.A.T.A.: Tampico TB9
	Slingsby: T67C Firefly
	Daetwyler: MD-3-160
	Nash Aircraft Ltd.: Petrel
	Aviolight: P66D Delta
	General Avia: Pinguino
O-320-D2B	Beech Aircraft: Musketeer (M-23)
	Piper Aircraft: Cherokee (PA-28 “160”)
O-320-D2J	Cessna Aircraft: Skyhawk 172
O-320-D3G	Piper Aircraft: Warrior II, Cadet (PA-28-161)
O-320-E1A	Grob: G115
O-320-E1C	M.B.B. (Messerschmitt-Boelkow-Blohm): Monsun (BO-209-B)
O-320-E1F	M.B.B.: Monsun (BO-209-B)
O-320-E2A	Piper Aircraft: Cherokee (PA-28 “140”, PA-28 “150”)
	Robin: Major (DR-340), Sitar, Bagheera (GY-100-135)
	S.O.C.A.T.A.: Super Rallye (MS-886), Rallye Commodore (MS-892)
	Siai-Marchetti: (S-202)
	F.F.A.: Bravo (AS-202/15)
	Partenavia: Oscar (P66B), Bucker (131 APM)
	Aeromot: Paulistina P-56
	Pezetel: Koliber 150

O-320-E2C	Beech Aircraft: Musketeer III (M -23III)
	M.B.B.: Monsun (BO-209-B)
O-320-E2D	Cessna Aircraft: Cardinal (172-I, 177)
O-320-E2F	M.B.B.: Monsun (BO-209-B), Wassmer Pacific (WA-51)
O-320-E2G	American Aviation Corp.: Traveler
O-320-E3D	Piper Aircraft: Cherokee (140)
	Beech Aircraft: Sport
IO-320-B2A	Piper Aircraft: Twin Comanche (PA-30)
IO-320-B1C	Hi. Shear: Wing
IO-320-B1D	Ted Smith Aircraft: Aerostar
IO-320-C1A	Piper Aircraft: Twin Comanche (PA-30 Turbo)
IO-320-D1A	M.B.B.: Monsun (BO-209-C)
IO-320-D1B	M.B.B.: Monsun (BO-209-C)
IO-320-E1A	M.B.B.: Monsun (BO-209-C)
IO-320-E1B	Bellanca Aircraft
IO-320-E2A	Champion Aircraft: Citabria
IO-320-E2B	Bellanca Aircraft
IO-320-F1A	CAAR Engineering: Carr Midget
LIO-320-B1A	Piper Aircraft: Twin Comanche (PA-39)
LIO-320-C1A	Piper Aircraft: Twin Comanche (PA-39)
AIO-320-B1B	M.B.B.: Monsun (BO-209-C)
AEIO-320-D1B	Slingsby: T67M Firefly
AEIO-320-D2B	Hundustan Aeronautics Ltd.: HT-2
AEIO-320-E1A	Bellanca Aircraft
	Champion Aircraft
AEIO-320-E1B	Bellanca Aircraft
	Champion Aircraft: Decathalon (8KCAB-CS)
AEIO-320-E2B	Bellanca Aircraft
	Champion Aircraft: Decathalon (8KCAB)
O-320-A1A	Riley Aircraft: Riley Twin
O-360-A1A	Beech Aircraft: Travel Air (95, B-95)
	Piper Aircraft: Comanche (PA-24)
	Intermountain Mfg. Co.: Call Air (A-6)
	Lake Aircraft: Colonial (C-2, LA -4, 4A or 4P)
	Doyn Aircraft: Doyn-Cessna (170B, 172, 172A, 172B)

	Mooney Aircraft: Mark “20B” (M-20B)
	Earl Horton: Pawnee (Piper PA-25)
	Dinfia: Ranquel (1A-51)
	Neiva: (1PD-5901)
	Regente: (N-591)
	Wassmer: Super 4 (WA-50A), Sancy (WA-40), Baladou (WA-40), Pariou (WA-40)
	Sud: Gardan (GY-180)
	Bolkow: (207)
	Partenavia: Oscar (P-66)
	Siai-Marchetti: (S-205)
	Procaer: Picchio (F-15-A)
	S.A.A.B.: Safir (91-D)
	Malmo: Vipan (MF-10B)
	Aero Boero: AB-180
	Beagle: Airedale (A-109)
	DeHavilland: Drover (DHA-3MK3)
	Kingsford-Smith: Bushmaster (J5-6)
	Aero Engine Service Ltd.: Victa (R-2)
O-360-A1AD	S.O.C.A.T.A.: Tabago TB-10
O-360-A1D	Piper Aircraft: Comanche (PA-24)
	Lake Aircraft: Colonial (LA -4, 4A or 4P)
	Doyn Aircraft: Doyn-Beech (Beech 95)
	Mooney Aircraft: Master “21” (M-20E), Mark “20B”, “20D”, (M20B, M20C), Mooney Statesman (M-20G)
	Dinfia: Querandi (1A-45)
	Wassmer: (WA-50)
	Malmo: Vipan (MF1-10)
	Cessna Aircraft: Skyhawk
	Doyn Aircraft: Doyn-Piper (PA -23 “160”)
O-360-A1F6	Cessna Aircraft: Cardinal
O-360-A1F6D	Cessna Aircraft: Cardinal 177
	Teal III: TSC (1A3)
O-360-A1G6	Aero Commander
O-360-A1G6D	Beech Aircraft: Duchess 76
O-360-A1H6	Piper Aircraft: Seminole (PA-44)

O-360-A1LD	Wassmer: Europa WA-52
O-360-A1P	Aviat: Husky
O-360-A2A	Center Est Aeronautique: Regente (DR-253)
	S.O.C.A.T.A.: Rallye Commodore (MS-893)
	Societe Aeronautique Normande: Mousquetaire (D-140)
	Bolkow: Klemm (K1-107C)
	Partenavia: Oscar (P-66)
	Beagle: Husky (D5-180) (J1-U)
O-360-A2D	Piper Aircraft: Comanche (PA-24), Cherokee “C” (PA-28 “180”)
	Mooney Aircraft: Master “21” (M-20D), Mark “21” (M-20E)
O-360-A2E	Std. Helicopter
O-360-A2F	Aero Commander: Lark (100)
	Cessna Aircraft: Cardinal
O-360-A2G	Beech Aircraft: Sport
O-360-A3A	C.A.A.R.P.S.A.N.: (M-23III)
	Societe Aeronautique Normande: Jodel (D-140C)
	Robin: Regent (DR400/180), Remorqueur (DR400/180R). R-3170
	S.O.C.A.T.A.: Rallye 180GT, Sportavia Sportsman (RS-180)
	Norman Aeroplace Co.: NAC-1 Freelance
	Nash Aircraft Ltd.: Petrel
O-360-A3AD	S.O.C.A.T.A.: TB-10
	Robin: Aiglon (R-1180T)
O-360-A4A	Piper Aircraft: Cherokee “D” (PA-28 “180”)
O-360-A4D	Varga: Kachina
O-360-A4G	Beech Aircraft: Musketeer Custom III
O-360-A4K	Grumman American: Tiger
	Beech Aircraft: Sundowner 180
O-360-A4M	Piper Aircraft: Archer II (PA-28 “18”)
	Valmet: PIK-23
O-360-A4N	Cessna Aircraft: 172 (Optional)
O-360-A4P	Penn Yan: Super Cub Conversion
O-360-A5AD	C. Itoh and Co.: Fuji FA -200
O-360-B2C	Seabird Aviation: SB7L
O-360-C1A	Intermountain Mfg. Co.: Call Air (A-6)
O-360-C1E	Bellanca Aircraft: Scout (8GCBC-CS)

O-360-C1F	Maule: Star Rocket MX-7-180
O-360-C1G	Christen: Husky (A-1)
O-360-C2B	Hughes Tool Co.: (269A)
O-360-C2D	Hughes Tool Co.: (269A)
O-360-C2E	Hughes Tool Co.: (YHO-2HU) Military
	Bellanca Aircraft: Scout (8GCBC FP)
O-360-C4F	Maule: MX-7-180A
O-360-C4P	Penn Yan: Super Cub Conversion
O-360-F1A6	Cessna Aircraft: Cutlass RG
O-360-J2A	Robinson: R22
IO-360-B1A	Beech Aircraft: Travel-Air (B-95A)
	Doyn Aircraft: Doyn-Piper (PA -23 “200”)
IO-360-B1B	Beech Aircraft: Travel-Air (B-95B)
	Doyn Aircraft: Doyn-Piper (PA -23 “200”)
	Fuji: (FA-200)
IO-360-B1D	United Consultants: See-Bee
IO-360-B1E	Piper Aircraft: Arrow (PA-28 “180R”)
IO-360-B1F	Utva: 75
IO-360-B2E	C.A.A.R.P. C.A.P. (10)
IO-360-B1F6	Great Lakes: Trainer
IO-360-B1G6	American Blimp: Spector 42
IO-360-B2F6	Great Lakes: Trainer
LO-360-A1G6D	Beech Aircraft: Duchess
LO-360-A1H6	Piper Aircraft: Seminole (PA-44)
IO-360-E1A	T.R. Smith Aircraft: Aerostar
IO-360-L2A	Cessna Aircraft: Skyhawk C-172
IO-360-M1A	Diamond Aircraft: DA-40
IO-360-M1B	Vans Aircraft: RV6, RV7, RV8
	Lancair: 360
AEIO-360-B1F	F.F.A.: Bravo (200)
	Grob: G115/Sport-Acro
AEIO-360-B1G6	Great Lakes
AEIO-360-B2F	Mundry: CAP-10
AEIO-360-B4A	Pitts: S-1S
AEIO-360-H1A	Bellanca Aircraft: Super Decathalon (8KCAB-180)

AEIO-360-H1B	American Champion: Super Decathalon
VO-360-A1A	Brantly Hynes Helicopter: (B-2)
VO-360-A1B	Brantly Hynes Helicopter: (B-2, B2-A). Military (YHO-3BR)
VO-360-B1A	Brantly Hynes Helicopter: (B-2, B2-A)
IVO-360-A1A	Brantly Hynes Helicopter: (B2-B)
HO-360-B1A	Hughes Tool Co.: (269A)
HO-360-B1B	Hughes Tool Co.: (269A)
HO-360-C1A	Schweizer: (300C)
HIO-360-B1A	Hughes Tool Co.: Military (269-A-1). (TH-55A)
HIO-360-B1B	Hughes Tool Co.: (269A)
HIO-360-G1A	Schweizer: (CB)
O-540-A1A	Rhein-Flugzeugbau: (RF-1)
O-540-A1A5	Piper Aircraft: Comanche (PA-24 “180”) Helio: Military (H-250) Yoeman Aviation: (YA-1)
O-540-A1B5	Piper Aircraft: Aztec (PA-23 “250”), Comanche (PA-24 “250”)
O-540-A1C5	Piper Aircraft: Comanche (PA-24 “250”)
O-540-A1D	Found Bros.: (FBA-2C) Dornier: (DO-28-B1)
O-540-A1D5	Piper Aircraft: Aztec (PA-23 “250”), Comanche (PA-24 “250”), Military Aztec (U-11A) Dornier: (DO-28)
O-540-A2B	Aero Commander: (500) Mid-States Mfg. Co.: Twin Courier (H-500), (U-5)
O-540-A3D5	Piper Aircraft: Navy Aztec (PA-23 “250”)
O-540-B1A5	Piper Aircraft: Apache (PA-23 “235”)
O-540-B1B5	Piper Aircraft: Comanche (PA-24 “250”) Doyn Aircraft: Doyn-Piper (PA-24 “250”)
O-540-B1D5	Wassmer: (WA-421)
O-540-B2B5	Piper Aircraft: Pawnee (PA-25 “235”), Cherokee (PA -28 “235”), Aztec (PA -23 “235”) Intermountain Mfg. Co.: Call Air (A-9) Rawdon Bros.: Rawdon (T-1) S.O.C.A.T.A.: Rallye 235CA
O-540-B2C5	Piper Aircraft: Pawnee (PA-25 “235”)

O-540-B4B5	Piper Aircraft: Cherokee (PA-28 “235”)
	Embraer: Corioca (EMB-710)
	S.O.C.A.T.A.: Rallye 235GT, Rallye 235C
	Maule: Star Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235)
O-540-E4A5	Piper Aircraft: Comanche (PA-24 “260”)
	Aviamilano: Flamingo (F-250)
	Siai-Marchetti: (SF-260), (SF-208)
O-540-E4B5	Britten-Norman: (BN-2)
	Piper Aircraft: Cherokee Six (PA-32 “260”)
O-540-E4C5	Pilatus Britten-Norman: Islander (BN-2A-26), Islander (BN-2A-27), Islander II (BN-2B-26), Islander (BN-2A-21), Trislander (BN-2A-Mark III-2)
O-540-F1B5	Omega Aircraft: (BS-12D1)
	Robinson: (R-44)
O-540-G1A5	Piper Aircraft: Pawnee (PA -25 “260”)
O-540-H1B5D	Aero Boero: 260
O-540-H2A5	Embraer: Impanema “AG”
	Gippsland: GA-200
O-540-H2B5D	Aero Boero: 260
O-540-J1A5D	Maule: Star Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235)
O-540-J3A5	Robin: R-3000/235
O-540-J3A5D	Piper Aircraft: Dakota (PA -28-236)
O-540-J3C5D	Cessna Aircraft: Skylane RG
O-540-L3C5D	Cessna Aircraft: TR-182, Turbo Skylane RG
IO-540-C1B5	Piper Aircraft: Aztec B (PA-23 “250”), Comanche (PA-24 “250”)
IO-540-C1C5	Riley Aircraft: Turbo-Rocket
IO-540-C4B5	Piper Aircraft: Aztec C (PA-23 “250”), Aztec F
	Wassmer: (WA4-21)
	Avions Pierre Robin: (HR100/250)
	Bellanca Aircraft: Aries T-250
	Aerofab: Renegade 250
IO-540-C4D5	S.O.C.A.T.A.: TB-20
IO-540-C4D5D	S.O.C.A.T.A.: Trinidad TB-20
IO-540-D4A5	Piper Aircraft: Comanche (PA-24 “260”)
	Siai-Marchetti: (SF-260)

IO-540-D4B5	Cerva: (CE-43 Guepard)
IO-540-J4A5	Piper Aircraft: Aztec (PA-23 “250”)
IO-540-R1A5	Piper Aircraft: Comanche (PA-24)
IO-540-T4A5D	General Aviation: Model 114
IO-540-T4B5	Commander: 114B
IO-540-T4B5D	Rockwell: 114
IO-540-T4C5D	Lake Aircraft: Seawolf
IO-540-V4A5	Maule: MT-7-260, M -7-260
	Aircraft Manufacturing Factory
IO-540-V4A5D	Brooklands: Scoutmaster
IO-540-W1A5	Maule: MX-7-235, MT-7-235, M7-235
IO-540-W1A5D	Maule: Star Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235)
IO-540-W3A5D	Schweizer: Power Glider
AEIO-540-D4A5	Christen: Pitts (S-2S), S-2B)
	Siai-Marchetti: SF-260
	H.A.L.: HPT-32
	Slingsby: Firefly T3A
AEIO-540-D4B5	Moravan: Zlin-50L
	H.A.L.: HPT-32
AEIO-540-D4D5	Burkhart Grob: Grob G, 115T Aero
TIO-540-C1A	Piper Aircraft: Turbo Aztec (PA-23-250)
TIO-540-K1AD	Piper Aircraft
TIO-540-AA1AD	Aerofab Inc.: Turbo Renegade (270)
TIO-540-AB1AD	S.O.C.A.T.A.: Trinidad TC TB-21
TIO-540-AB1BD	Schweizer
TIO-540-AF1A	Mooney Aircraft: “TLS” M20M
TIO-540-AG1A	Commander Aircraft: 114TC
TIO-540-AK1A	Cessna Aircraft: Turbo Skylane T182T
LTIO-540-K1AD	Piper Aircraft

Unsafe Condition

(d) This AD results from reports of 45 failures with head separations of ECi cylinder assemblies. We are issuing this AD to prevent loss of engine power due to cracks at the head-to-barrel interface in the cylinder assemblies and possible engine failure caused by separation of a cylinder head, which could result in loss of control of the aircraft.

Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

Engines Not Overhauled or Cylinder Assemblies Not Replaced Since New

(f) If your engine has not been overhauled or had any cylinder assemblies replaced since new, no further action is required.

Engines Overhauled or Cylinder Assemblies Replaced Since New

(g) If your engine was overhauled or had a cylinder assembly replaced since new, do the following:

(1) Before further flight, inspect the maintenance records and engine logbook to determine if the overhaul or repair facility used ECi cylinder assemblies, P/N AEL65102, with cylinder head, PN AEL85099, with a SN 1138-02 through SN 35171-22, or a SN 35239-01 through SN 37016-28, installed.

(2) If the cylinder assemblies are not ECi, P/N AEL65102, no further action is required.

(3) If the cylinder assemblies are ECi, P/N AEL65102, and if the serial number is not listed in this AD, no further action is required.

(4) If the cylinder assemblies are ECi, P/N AEL65102, and if the serial number is listed in this AD, do the following:

Group ''A'' Cylinder Assemblies

(i) For Group "A" cylinder assemblies:

(A) Perform an initial visual inspection as specified in paragraphs (h) through (j) of this AD, and an initial compression test as specified in paragraphs (k) through (o) of this AD, within the next 10 operating hours time-in-service (TIS), if the cylinder assembly has 350 or more operating hours TIS on the effective date of this AD, but fewer than 2,000 operating hours TIS.

(B) Perform an initial visual inspection as specified in paragraphs (h) through (j) of this AD, and an initial compression test as specified in paragraphs (k) through (o) of this AD, before exceeding 350 operating hours TIS, if the cylinder assembly has fewer than 350 operating hours TIS on the effective date of this AD.

(C) Replace cylinder assemblies installed in helicopter engines within the next 25 operating hours TIS after the effective date of this AD if the cylinder assembly has 1,500 operating hours TIS or more on the effective date of this AD.

(D) Replace cylinder assemblies installed in airplane engines within the next 25 operating hours TIS after the effective date of this AD if the cylinder assembly has 2,000 operating hours TIS or more on the effective date of this AD.

(E) Perform repetitive visual inspections as specified in paragraphs (h) through (j) of this AD, and repetitive compression tests as specified in paragraphs (k) through (o) of this AD, within every 50 operating hours TIS.

(F) Replace cylinder assemblies installed in helicopter engines that pass the visual inspections and compression tests, no later than 1,500 operating hours TIS after the effective date of this AD.

(G) Replace cylinder assemblies installed in airplane engines that pass the visual inspections and compression tests, no later than 2,000 operating hours TIS after the effective date of this AD.

Group ''B'' Cylinder Assemblies

(ii) For Group "B" cylinder assemblies:

(A) Perform an initial visual inspection as specified in paragraphs (h) through (j) of this AD, and initial compression test as specified in paragraphs (k) through (o) of this AD, within an additional 10 operating hours TIS.

(B) Replace the cylinder assembly within the next 25 operating hours TIS after the effective date of this AD if the cylinder assembly has 350 or more operating hours TIS on the effective date of this AD.

(C) Replace cylinder assemblies that pass the initial visual inspections and compression tests, before exceeding 350 operating hours TIS after the effective date of this AD.

Visual Inspection

(h) Visually inspect around the exhaust valve side, for cracks or any signs of black or white residue of combustion leakage from cracks.

(i) Replace cracked cylinder assemblies before further flight.

(j) Information on cylinder assembly visual inspection can be found in ECi Mandatory Service Bulletin (MSB) No. 08-1, Revision 3, dated August 19, 2008.

Cylinder Assembly Compression Test

(k) Compression test the cylinder assembly.

(l) Information on cylinder assembly compression testing can be found in ECi MSB No. 08-1, Revision 3, dated August 19, 2008.

(m) During the compression test, if the cylinder pressure gauge reads below 70 pounds-per-square-inch, apply a water and soap solution to the side of the leaking cylinder, near the head-to-barrel interface.

(n) Replace the cylinder assembly before further flight, if air leakage and bubbles are observed on the side of the cylinder assembly, near the head-to-barrel interface.

(o) Repair or replace the engine cylinder assembly before further flight if the cause of the low gauge reading in paragraph (m) of this AD is from leaking intake or exhaust valves, or from leaking piston rings.

Prohibition of ECi Cylinder Assemblies Affected by This AD

(p) After the effective date of this AD, do not install any ECi cylinder assembly, P/N AEL65102, with cylinder head, P/N AEL85099, and with SN 1138-02 through SN 35171-22, or SN 35239-01 through SN 37016-28, onto any engine, and do not attempt to repair or reuse these ECi cylinder assemblies.

Alternative Methods of Compliance

(q) The Manager, Special Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

Special Flight Permits

(r) Under 14 CFR 39.23, we will not approve special flight permits for this AD for engines that have failed the visual inspection or the cylinder assembly compression test required by this AD.

Related Information

(s) ECi Mandatory Service Bulletin No. 08-1, Revision 3, dated August 19, 2008, pertains to the subject of this AD.

(t) Contact Peter W. Hakala, Aerospace Engineer, Special Certification Office, FAA, Rotorcraft Directorate, 2601 Meacham Blvd., Fort Worth, TX 76193; e-mail: peter.w.hakala@faa.gov; telephone (817) 222-5145; fax (817) 222-5785, for more information about this AD.

Issued in Burlington, Massachusetts, on September 5, 2008.
Peter A. White,
Assistant Manager, Engine and Propeller Directorate, Aircraft Certification Service.
[FR Doc. E8-21125 Filed 9-12-08; 8:45 am]